REMARKS

Introduction

In response to the Office Action dated December 27, 2006, Applicants have amended claims 1-3, 5-13, 15-23, and 25-28. Care has been taken to avoid the introduction of new matter. Claims 4, 14, and 24 have been cancelled. In view of the foregoing amendments and the following remarks, Applicants respectfully submit that all pending claims are in condition for allowance.

Claim Objections

Claims 5-8, 10, 11, 15-20, and 25-28 were objected to for purportedly being in improper form because a multiple dependent claim cannot depend on another multi dependent claim. Claims 5-8, 10, 11, 15-20, and 25-28 have been amended to depend on a single claim. Withdrawal of the foregoing objection is respectfully requested.

Claim Rejection Under 35 U.S.C. § 103

Claims 1, 12, 13, and 21 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,803,967 (hereinafter Plano) in view of JP 03-075298 (hereinafter Takahiro). The Office Action asserts that Plano teaches a method of growing a diamond structure. However, Plano fails to suggest "a diamond composite structure" as required by independent claims 1, 12, and 21. Plano uses a non-diamond semiconductor substrate, such as monocrystalline silicon, refractory metals, and their carbides (col. 5, lines 11-14).

In contrast, the present application forms a diamond polycrystalline film on a diamond monocrystalline substrate (*see, e.g.,* Para. [0066] of the present application).

Thus, Plano fails to suggest "a diamond composite structure" as required by independent claims 1, 12, and 21.

Further, amended claim 1, for example, recites, "...wherein the diamond monocrystalline substrate having a thickness defined by a spacing between the main faces to be at least 0.1 mm and no more 1 mm."

In the present application, laminating a diamond monocrystalline substrate having high thermal conductivity and a diamond polycrystalline film that is formed by vapor phase synthesis having high toughness over the monocrystalline substrate yields a diamond composite substrate that combines high thermal conductivity with high toughness (*see, e.g.,* Para. [0042]). The thermal conductivity and toughness of the diamond composite substrate of the present application are in a reciprocal relationship, there are optimal ranges for the thickness of the monocrystal layers, the thickness of the polycrystalline layers, and the ratio thereof (*see, e.g.,* Para. [0047]). Plano fails to teach or suggest a diamond monocrystalline substrate having a thickness to be at least 0.1 mm and no more 1 mm as required by amended claims 1, 12, and 21.

The Office Action states that the sole difference between the instant claims and the prior art is that nucleation sites being single crystal diamonds placed next to each other. The Office Action relies on Takahiro to cure the deficiencies of Plano.

Takahiro describes a large-sized **single** crystal (abstract). Thus, Takahiro fails to teach or suggest, "a diamond composite structure" as required by independent claims 1, 12, and 21.

The Examiner is directed to MPEP § 2143.03 under the section entitled "All Claim Limitations Must Be Taught or Suggested," which sets forth the applicable standard for establishing obviousness under § 103:

> To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (citing *In re Royka*, 180 USPQ 580 (CCPA 1974)).

In the instant case, the pending rejection does not "establish *prima facie* obviousness of [the] claimed invention" as recited in claims 1-3, 5-13, 15-23, and 25-28 because the proposed combination fails the "all the claim limitations" standard required under § 103.

Further, Plano discusses using nucleation sites to grow a polycrystalline film on the non-diamond substrate (abstract). In the present application, the diamond polycrystalline film is formed on the diamond monocrystalline substrate (*see, e.g.,* Example 2 of the present application).

Thus, Plano fails to suggest, "forming a diamond polycrystalline film by a vapor phase synthesis over the plurality of diamond monocrystals" as recited in amended claim 21, for example.

Conclusion

In view of the above amendments and remarks, Applicants submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper,

including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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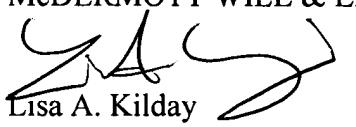

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